



VIRGINIA

COVID-19 Update February 4th, 2021

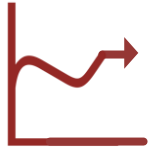
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A team of RAND researchers was asked by the Commonwealth of Virginia to review available information on COVID-19 models of the Commonwealth to determine the strengths and weaknesses of each model and their relevance to decisionmaking. The information in this presentation is intended to keep policymakers abreast of the latest findings of the research team.

This research was sponsored by the Commonwealth of Virginia and conducted by the RAND Corporation. RAND is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. For more information, visit www.rand.org.



Bottom-Line Up Front



Virginia's total case levels remain very high but have declined

- Hospitalizations have started to decline but remain high
- Testing has plateaued



Vaccine administration is accelerating

- Large stockpiles remain
- About half of doses have been delivered but not administered

New COVID variants have been detected in Virginia and could accelerate spread

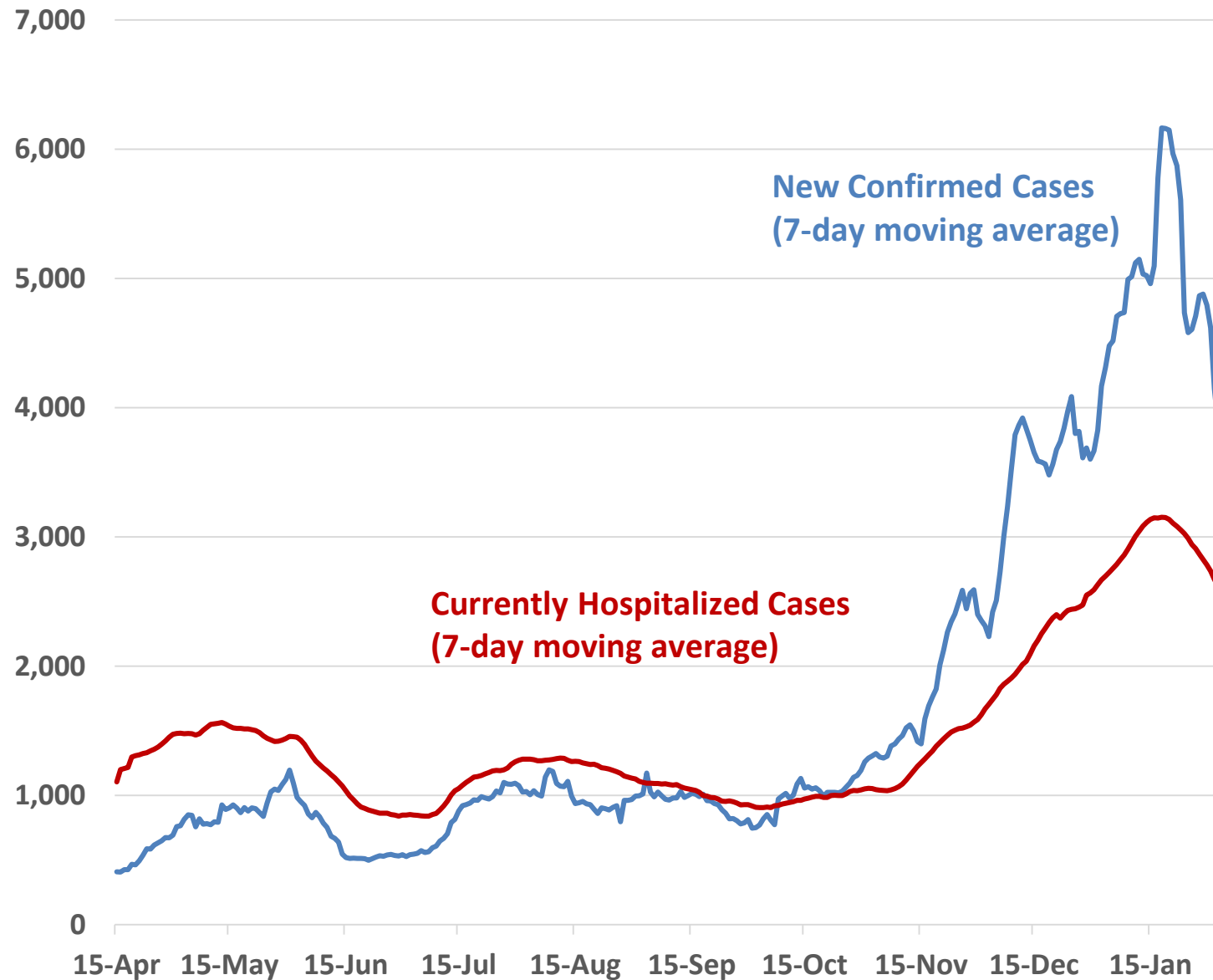


Model forecasts may be less accurate because behavior is driving growth

- Models will continue to be useful for comparing policies and exploring scenarios



Cases and hospitalizations remain high



New confirmed cases have dipped to below 4,000/day on average

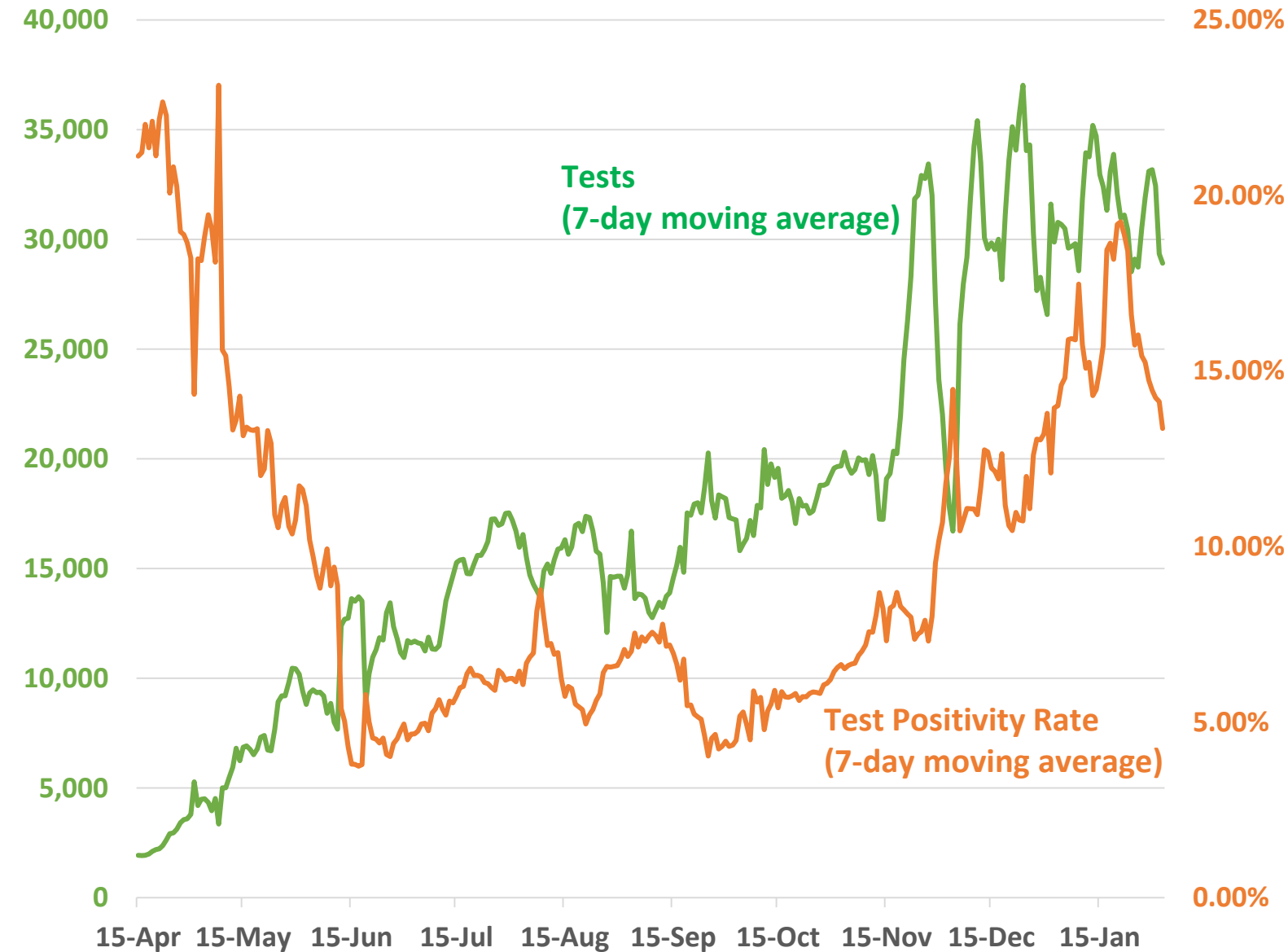
- This is the level from late December

Currently hospitalized cases peaked in mid-January

- Hospitalizations are likely to continue to fall for the next few weeks
- The decline in hospitalizations will typically be slower than that of cases



Testing remains high



Tests per day have averaged a little below 30,000

- Testing increased substantially beginning at the end of October
- However, testing has ranged around 30,000 to 35,000 for months

The test positivity rate is roughly 13 percent

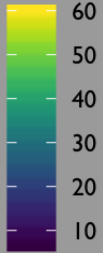
- Five percent is a suggested target
- At this rate, the case count levels are likely to be slightly less reliable

Case levels have declined but remain very high across the Commonwealth

CASE COUNT

Source: VDH

Cases per 100,000



Yellow indicates at least 60 cases per 100,000

- This scale has changed from 80 cases per 100,000 last week

Case levels have declined across the Commonwealth

- 63 percent of counties have more than 40 cases per 100,000 (89 percent two weeks ago)
- 4 percent have more than 100 cases per 100,000 (18 percent two weeks ago)

These data were updated February 3rd and represent a seven-day average of the previous week

The spread has declined in most neighboring states

Over the last 7 days, Virginia had 45.3 (-16% from last week) new confirmed cases per day per 100,000

Very high case loads (>20):

- Kentucky (52.5 new cases per 100k, -16% from last week)*
- North Carolina (50.1, -14%)
- Tennessee (39.6, -16%)*
- West Virginia (39.5, -20%)
- District of Columbia (29.1, 0%)
- Maryland (28.2, -3%)

*Test positivity rates above 10%

High case loads (10-20): None

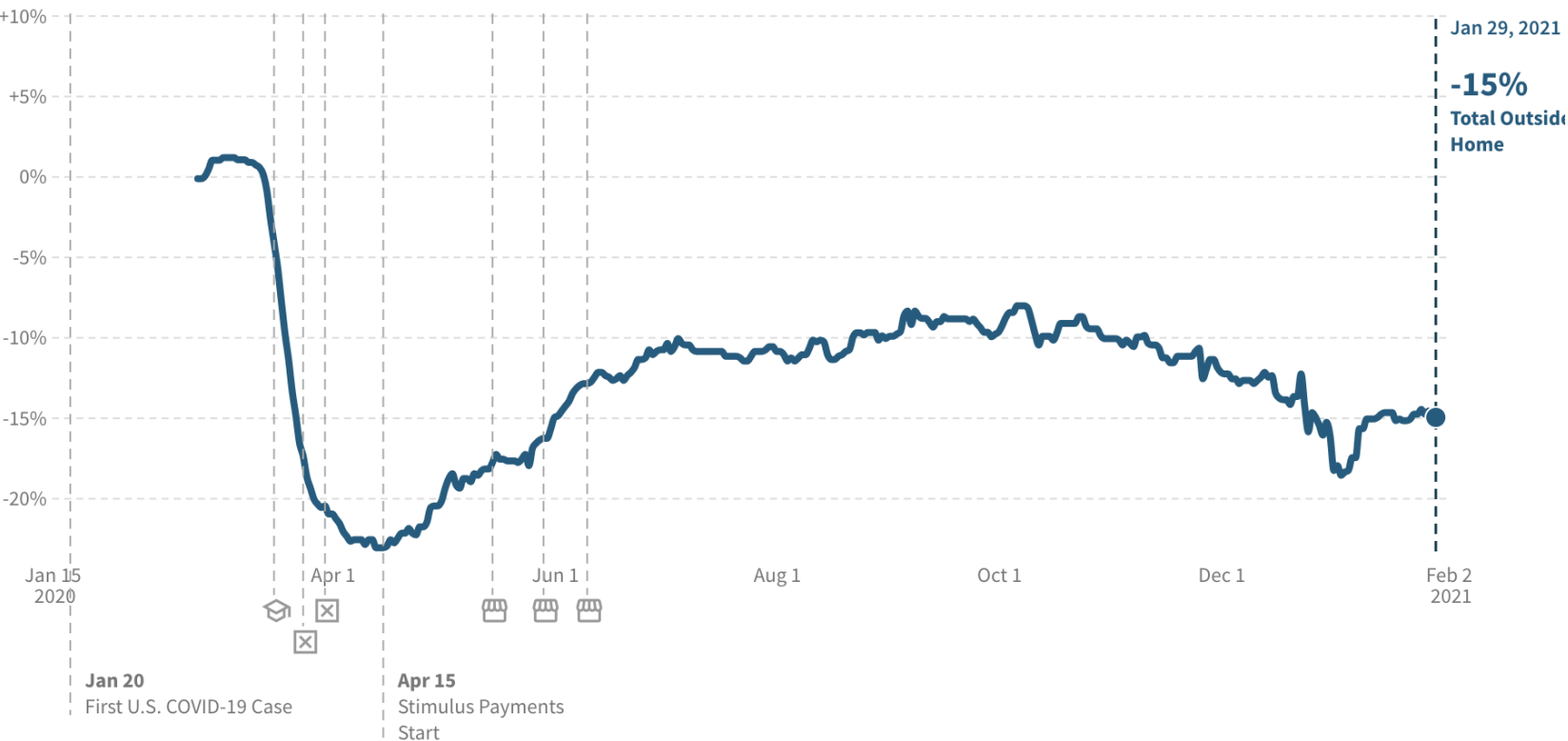
Lower case loads (<10): None

These data were updated February 3rd and represent a seven-day average of the previous week

The decline in mobility may be helping to slow the spread

Time spent away from home compared to January 2020

Source: <https://tracktherecovery.org/>



There was a dip associated with the holidays and movement has not fully bounced back

Time spent away from home is about 15 percent lower than this time last year

The change varies across the Commonwealth

- Northern region has seen a 20 percent decline
- Far Southwest region has declined by 10 percent



Almost two percent of Virginians are fully vaccinated and seven percent have received the first shot

Age	0-9	10--19	20-29	30-39	40-49	50-59	60-69	70-79	80+	Total
Fully Vaccinated	0	717	18,765	28,897	27,577	28,051	19,021	6,664	7,039	136,731
% Full	0.0%	0.1%	1.6%	2.5%	2.6%	2.5%	1.9%	1.1%	2.3%	1.6%
Partially Vaccinated	0	3,202	54,524	77,426	86,375	94,622	96,129	119,701	89,564	621,543
% with Partial	0.0%	0.3%	4.7%	6.6%	8.0%	8.4%	9.8%	19.5%	28.8%	7.3%
Confirmed Cases	20,755	49,708	94,885	81,647	73,920	72,749	49,972	27,781	20,556	491,973
% Confirmed Cases	2.1%	4.5%	8.2%	7.0%	6.9%	6.5%	5.1%	4.5%	6.6%	5.8%

Source: VDH, February 3rd

Vaccinations are being rolled out in Virginia

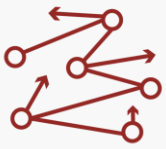
- 1,385,875 doses have been distributed as of February 3rd
- Virginia's program has administered 82 percent (662,772 out of 807,600) of its first doses
- It has also administered 29 percent (115,259 out of 399,850) of its second doses
- The Federal Long-Term Care Facility Program has administered 66 percent (117,474 of 178,425) of doses

As of February 3rd, 490,370 doses had been distributed but not administered in Virginia

- Stockpiles have a risk of spoilage and the risk increases with time in storage
- Stockpiles also represent an opportunity cost delaying the pace of the recovery
- The location of these stockpiles can be used to identify the bottlenecks and improve logistics
- Operations research and management science can improve the efficiency of administration



We've been monitoring recent, relevant literature (1/3)



Yang et al. compared outcomes of COVID for 122 health care workers to 366 non-HCWs in North America

- Working in health care is not associated with poorer outcomes
- HCWs typically have shorter hospitalizations and time in the ICU compared to non-HCW with appropriate controls

Chen et al. looked at excess mortality among Californians aged 18 to 65 by race/ethnicity and sector/occupation for March to October of 2020



- In general, mortality increased 22 percent compared to historical levels
- Excess mortality was highest among food/agricultural workers (39 percent increase), transportation/logistics workers (28 percent increase), and facilities workers (27 percent increase)
- For Latino Californians, mortality increased 36 percent in general but 59 percent among food/agricultural workers
- For Black Californians, there was a general increase of 28 percent but 36 percent among retail workers
- For Asian Californians, the increase was 18 percent with a 40 percent increase among health care workers
- For white Californians, the increase was 6 percent with a 16 percent increase among food/agricultural workers

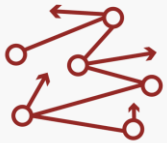


Varga et al. used survey data from 205,084 individuals in Western/Northern Europe to understand mental health implications of COVID-19 and the response from March to July of 2020

- COVID-19-related worries were substantially elevated at the beginning of the period and declined as restrictions were eased
- Loneliness was very high, particularly among young people (those under 30 years of age)
- They recommend additional mental health support for young people and those with a history of mental illness



We've been monitoring recent, relevant literature (2/3)



Jowers et al. used county level data to understand implications of moratoria on evictions and utility disconnections on the spread and deaths from COVID

- They estimate policies to limit evictions reduce infections by 3.8 percent and deaths by 11 percent
- Limitations on utility disconnections are estimated to reduce infections by 4.4 percent and deaths by 7.4 percent



Bubar et al. modeled different vaccine prioritization strategies by age and other characteristics

- They estimate that vaccinating those aged 20-49 years would minimize the total number infected but that lives lost would be minimized by prioritizing those over 60 years of age
- Further, using serological tests to delay vaccinating those with antibodies further reduces deaths and total infections



Yang et al. modeled the spread of COVID during and after the vaccine rollout

- Both mass-vaccinations and NPIs will be necessary to reduce the spread of B.1.1.7 and other VOCs
- Prioritizing high-risk individuals reduces hospitalizations and deaths
- Steps to accelerate the vaccination, such as loosening adherence to prioritization (i.e., don't wait to vaccinate everyone in risk group 1b before starting other risk groups), result in better outcomes



CDC also released several short research notes (3/3)

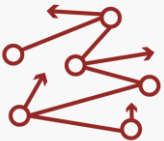
Pray et al. looked at trends in outbreaks in Wisconsin from March to November of 2020

- Outbreaks accounted for 18 percent of cases in Wisconsin
- Most outbreaks occurred in nursing homes (27 percent), colleges and universities (15 percent), and correctional facilities (15 percent)
- Outbreaks on campuses preceded broader community spread off-campus



Atherstone et al. studied a series of outbreaks associated with high school wrestling tournaments in Florida

- Masks were not worn during the competitions because they could be a choking hazard
- In one tournament in December, more than 30 percent of attendees tested positive within two weeks
- They recommend prohibiting sports where masks cannot be worn



Falk et al. analyzed outbreaks in K-12 classrooms in Wisconsin schools

- Incidence among students and staff was lower than the county overall
- Of the 191 cases identified in students and staff, only 7 were linked to in-school spread

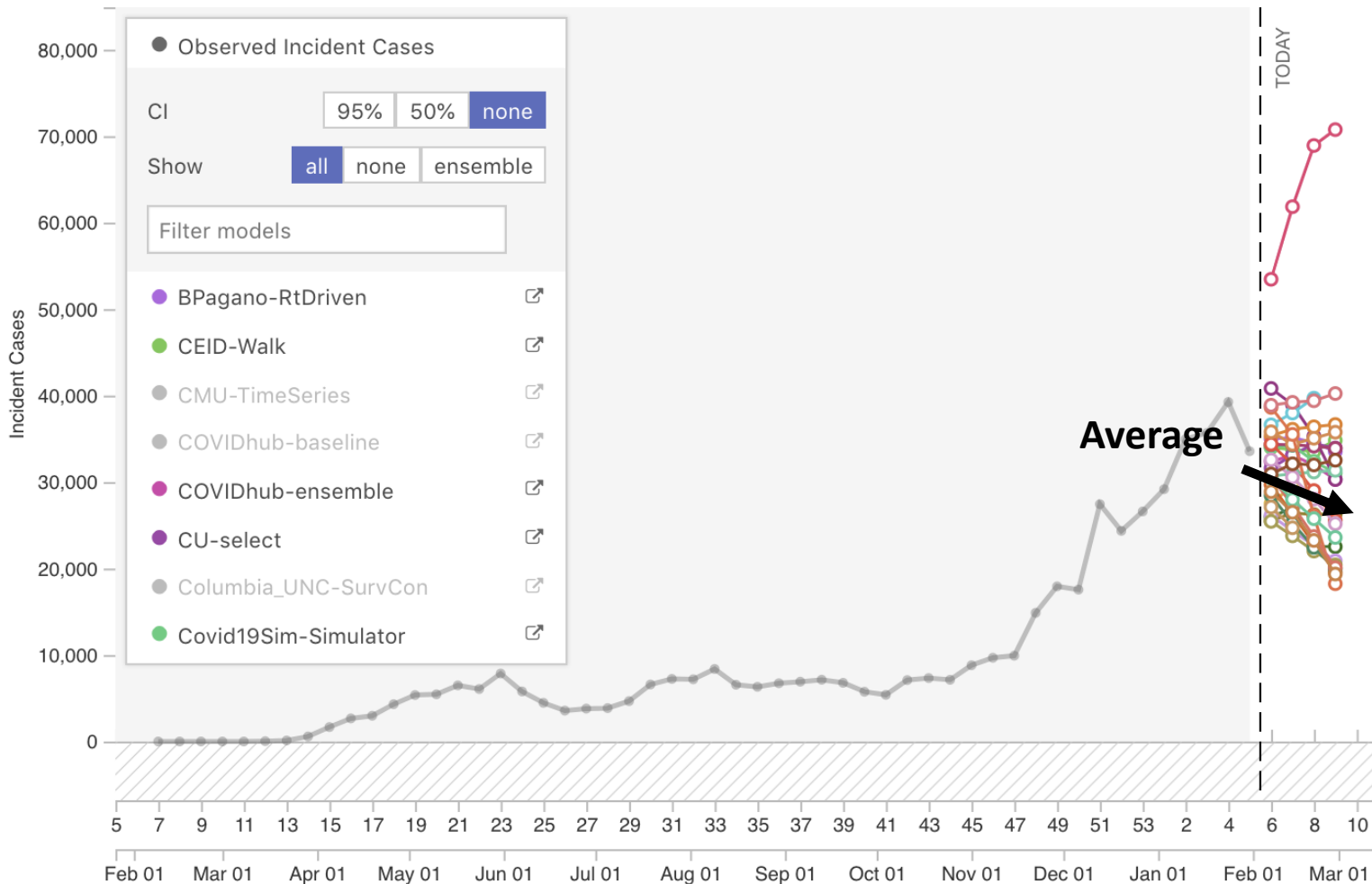


Miller et al. assessed the implications of COVID on cervical cancer screenings in a large hospital system in California

- Cervical cancer screening rates declined 80 percent compared to the previous year
- Delays in these preventative screenings could lead to later detection and hence worse outcomes



Forecasts for cases vary but average to a decline



There is variation in the case forecasts

- The model “average” is for a decline in the coming weeks

The mechanisms driving the spread at this stage are very different than in the early stage

- Initially, people did not change their behavior, so COVID spread exponentially
- Increased tele-work, changing weather, the return of in-person instruction, and other factors changed the pattern of spread
- These new patterns require the models to evolve

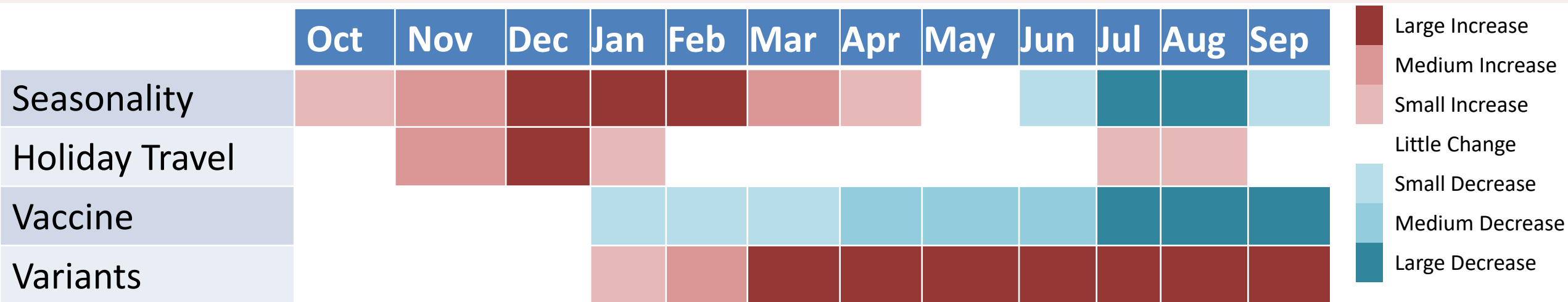
Many of the model predictions lag the data

- This means that they match the trends in retrospect but not as forecasts

Source: COVID-19 Forecast Hub, <https://viz.covid19forecasthub.org/>
Accessed February 3rd



There are several factors driving the spread




There are several factors that will continue to drive the spread for the next few months

- Seasonal effects for COVID-19 appear to have increased spread during colder weather
- Holiday activities appear to have increased spread but are largely over for now
- The vaccines are becoming available but are not being delivered in quantities sufficient to meaningfully reduce the spread for now
- The B.1.1.7, B.1.351, P.1, and P.2 Variants of Concern may increase the rate of spread as they enter Virginia and future variants could also change the severity or the efficacy of vaccines

There are some key unknowns about the current spread

- How many people have been infected with COVID-19 and have lingering protection?
- To what degree are people complying with best practices for prevention?



Discussion and Questions